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A N

# *Inaugural Dissertation*

ON THE

HYDROCEPHALUS INTERNUS,

OR

INTERNAL DROPSY OF THE BRAIN.

*Submitted to the Examination of*

The Rev. John Ewing, S. T. P. Provost,

THE

TRUSTEES AND MEDICAL FACULTY

OF THE

UNIVERSITY of PENNSYLVANIA.

*On the 17th May 1796.*

For the Degree of Doctor of Medicine.

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-----Si tibi vera videtur,  
Dede manus, et si falsa est, accingere contra.

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*Lucret.*

By ROBERT CHISOLM,  
of CHARLESTON, S. CAROLINA.

*Member of the Philadelphia Medical Society.*

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1796.



T O  
*Alexander Chisolm, Esq;*  
OF CHARLESTON, S. CAROLINA.

Honored Sir,

WITH a heart overflowing with effusions of gratitude, permit me to lay before you the first fruits of my medical studies. To you I not only owe my life, but what is more dear to me, my education. Accept this small tribute, as a token of affection for those numerous obligations which can never be obliterated from the mind of your dutiful and affectionate Son,

ROBERT CHISOLM.

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T O  
*Alexander Baron, M. D.*  
OF CHARLESTON, S. CAROLINA.

Respected Sir,

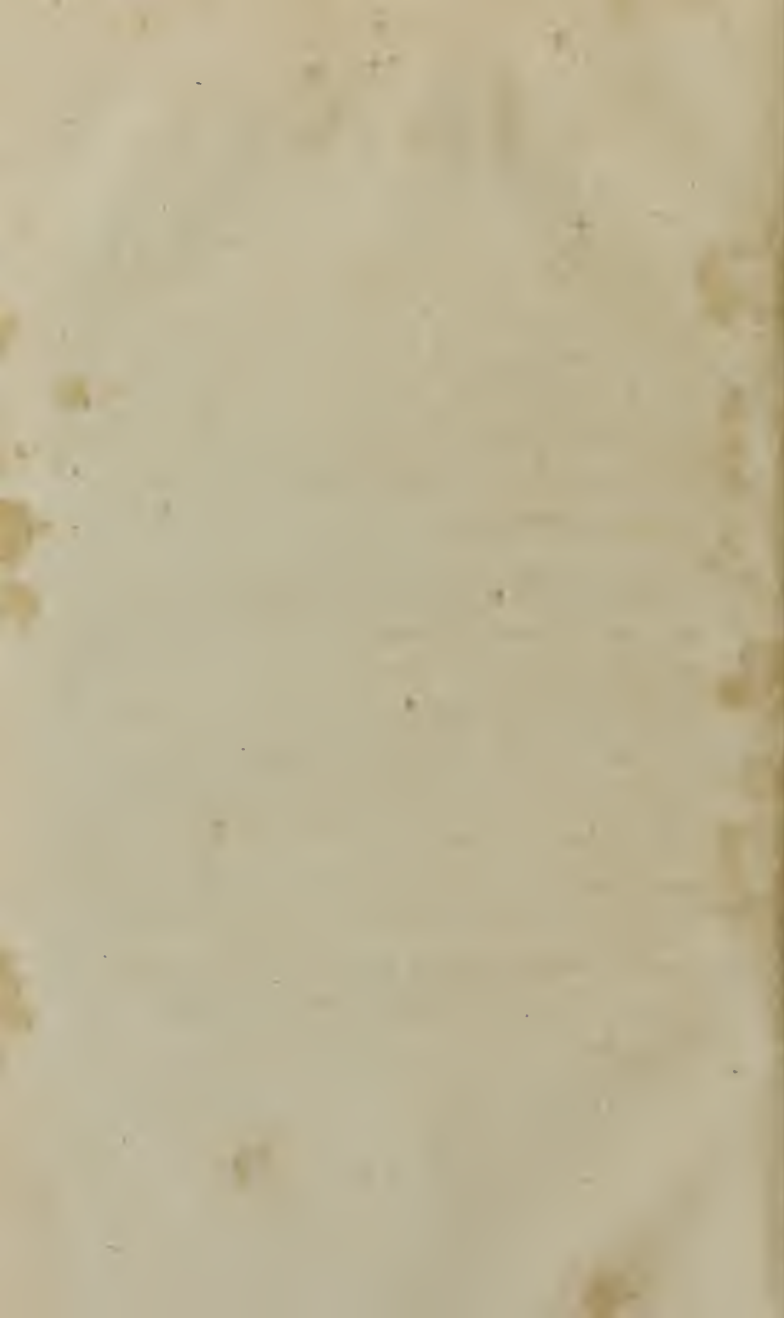
PERMIT me likewise to dedicate this Inaugural Dissertation to you, as a mark of the esteem, which I entertain for your character as a Scholar, a Physician, and a Man.

I have the Honor to be,

With the greatest Respect,

Your Humble Servant,

ROBERT CHISOLM.



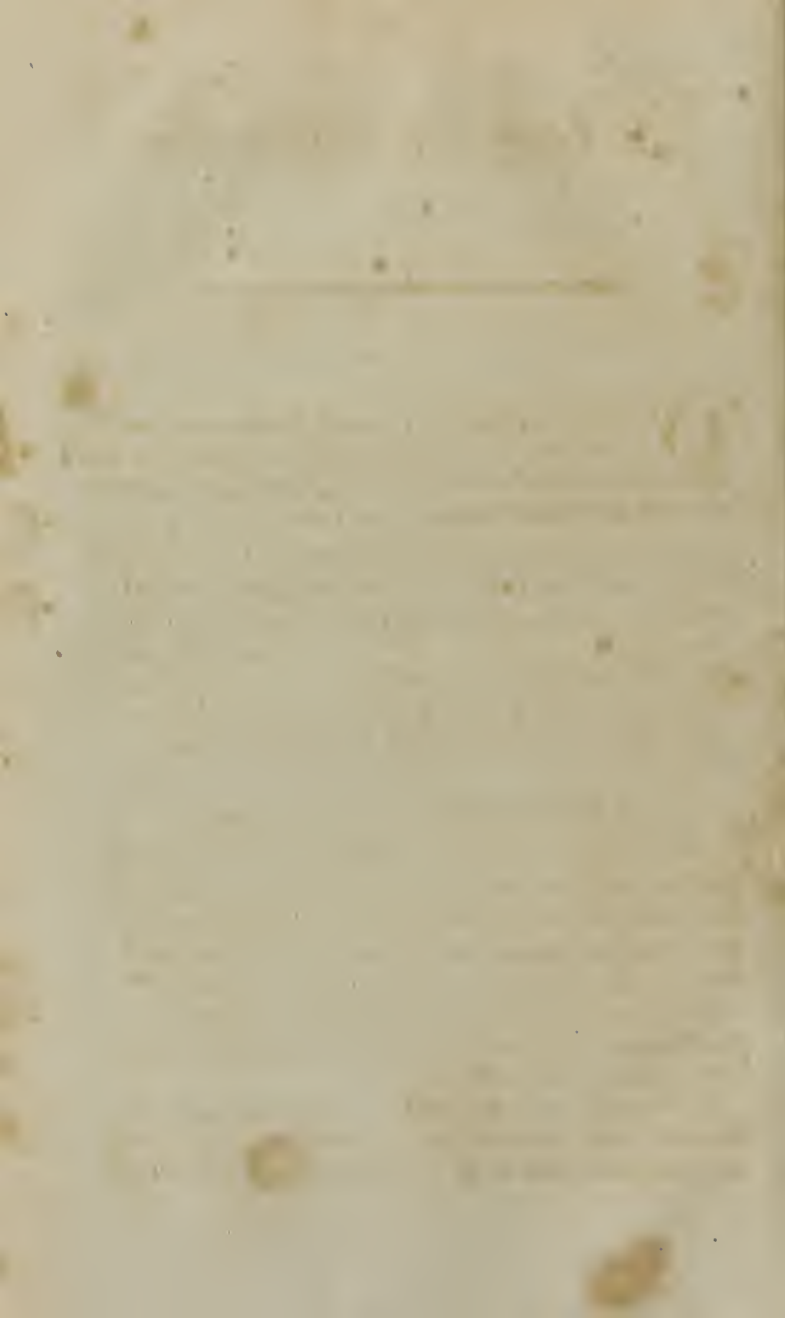


# P R E F A C E.

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*'TIS hard, says Sir Roger L'Estrange, that a man cannot publish a book, but he must give the world a reason for it ; when there's not one book of twenty that will bear a reason, not one man of an hundred that is able to give one, nor one reason of a thousand, that was the true reason for doing it.*

*This observation of our ingenious author, will apply better, perhaps, to almost any performance, than to an Inaugural Dissertation.— For let a man puzzle his brain ever so long, he can find but one reason for publishing a Medical Thesis, and that is necessity which obliges him to comply with the laws of the University, from which he receives his diploma. As this is the case, I have only to claim the indulgence of the reader, for attempting to write upon a disease, which is but little known even to the most able physicians.*



# *An Inaugural Dissertation.*

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OF all the diseases to which the human body is subject, no one is more alarming in its symptoms, or more fatal in its termination, than the HYDROCEPHALUS INTERNUS.

For the sake of method, I shall in the first place begin with the History of this disease—Secondly, speak of the Diagnosis—Thirdly, treat of the explication of some of the symptoms—Fourthly, say a few words on the Prognosis—Fifthly, mention the causes which bring on the complaint—and Lastly, proceed to the method of cure.

## OF THE HISTORY OF THE DISEASE.

Dr. Whytt thinks the Hydrocephalus is several months in forming; he has divided the symptoms of the disease into three stages:—The first stage, he supposes, begins five or six weeks before the fatal termination of the disorder.—The second, he says, takes place about three weeks, and the third a week or eight days before the death of the patient.

Fothergill cannot agree to this division; on the contrary, he has seen children who enjoyed an excellent state of health, seized with this dis-

temper, and carried off in about fourteen days; Doctor Quin has very properly declared, that the opinions of those gentlemen are both proper, certain circumstances being taken into consideration. Whytt having observed the disease in young children, it is easy to conceive, that the progress would be more gradual, and the symptoms not be so strongly marked, as in those of a more advanced age and stronger constitution, at which time they fell under the notice of Fothergill.

Children of all ages are subject to this complaint; it generally affects those between two and nine years of age. Dr. Rush tells us, that he has seen it in a child of six weeks old. It sometimes affects adults of a good habit of body\*.

In the commencement of the disease, the patient is peevish, inactive, drowsy, and feverish; falls away in flesh, has an acute, sometimes an obtuse pain in the head, which extends to the region of the eye-brows, and frequently affects the nape of the neck and shoulders; sometimes it is confined to one side of the head, and frequently the head-ach alternates with an affection of the stomach. In this state of the disease, the patient has an aversion to the light, grinds his teeth, and picks his nose—On a sudden, being terrified by dreams, he starts up in his sleep. In addition to these symptoms, a strabismus takes place, the pupil of the eye is dilated, the pain of the head is so great that the screaming of the miserable patient fills the minds of the spectators

\* Vide Lond. Med. Obs. & Inq. Vol. 6, p. 58—Vol. 4th, p. 86—Medical Communications, Vol. 11. p. 404—Medical Comment. Vol. 9, p. 240—Quin p. 26—Fothergill, Octavo Edition, Vol. 2, p. 74.

with the greatest horror. A delirium frequently occurs, and that of the most violent kind, says *Quin*, particularly if the patient has arrived at the age of puberty. The heat about the head, the part immediately affected, is excessive. The fever increases towards evening, when the countenance is greatly flushed. In breathing, there is a considerable pause after every expiration. The tongue is clean and white, sometimes it acquires an apthous redness.

The eyes sometimes grow red before death, the urine and foeces come away involuntarily, and the poor sufferer is often carried out of the world in convulsions.

The bowels are generally costive, stools are procured with difficulty, and when obtained are very offensive. A diarrhœa sometimes takes place.

Physicians greatly disagree in regard to the state of the pulse. *Whytt* says, in the beginning of the disease it is quick; *Fothergill* and *Watson*, that it is no quicker than in health. Some declare that it is slow, while *Dr. Rush* tells us he has met with a case, in which no uncommon slowness was ever perceived. *Quin* has seen a locked jaw take place in a child a day before its death, and a hemiplegia in another. *Dr. Rush* has observed it to terminate in this latter way in three persons. The same author, upon the authority of *Dr. Carson*, has recorded a case, in which a *Hydrophobia* was produced.

This account of the disease can only be considered as a mere outline; we want many observations, in addition to those of *Whytt*, *Fothergill*, *Quin*, *Patterson* and *Rush*, in order to form an accurate history of the *Hydrocephalus*. The symptoms enumerated in the preceding pages

occasionally occur, though none of them accompany the disorder, in an invariable manner. In consequence of this, Quin has emphatically called the Dropsy of the brain, "*a truly proteiform disease.*"

Like the bilious remitting yellow fever, it assumes a variety of shapes. Dr. Rush, to whom the medical world is greatly indebted, has told us, he has not found the dilated and insensible pupil, the delirium or strabismus to attend at all times. The same physician has seen a case in which the appetite was entirely unimpaired, from the first to the last stage of the disease, and met with another in which an uncommon acuteness in hearing took place.

Upon opening the head after death, the water\* is sometimes found between the cranium and dura mater, or between the dura and pia mater, but most frequently in the ventricles of the brain. The quantity of fluid contained in these cavities, is sometimes so great, as almost to exceed belief.—Whytt† has found eight ounces, Bonetus five pounds‡, §Monroe three pounds, Lieutaud relates a case where he found thirteen pounds, and Gustavus Hume opened the cranium and found five quarts of limpid water. This last was a most extraordinary case of Hydrocephalus. There was not the smallest portion of brain, or least trace of the membranes, except

\* Morgagni, Sauvages, Patterfon, Haygarth, and others, supposed the effused matter was *serum*, but this is not the case, for it will not coagulate by heat, an experiment which has been tried by Dr. Woodhouse.

† Whytt p. 735.

‡ Benetus Sepulch. Anat. Lib. Sect. 2d. Ob. 45. v. 1.

§ Monroe on the Dropsy, p. 154.



opposite the orbits of the eyes, and near the meatus auditorius, where something like medulla remained.

#### OF THE DIAGNOSIS.

As it is of some consequence to distinguish this disease, from any other resembling it, I shall say a few words on the Diagnosis. Whytt has informed us, it may be distinguished from worms, by attending to what he has called the following characteristic marks. In the Hydrocephalus, he says, the feverish heat is not abated when the pulse becomes slow and irregular, whereas, when it beats in this manner, in children who have worms, no fever attends. Dr. Whytt has been very unfortunate in this particular, for so seldom do worms produce a real disease, that it is doubted by many, whether there is such a thing as a genuine worm fever:—The disorder which is called a worm fever, is now known to be a simple remittent, which produces death, by terminating in a dropy of the brain.\* A slow irregular pulse, often attends in persons of a delicate make, when afflicted with violent nervous head-ach, but it is attended with a cool skin, whereas in the dropy of the brain, the feverish heat is excessive. By attending then to this one symptom, if we may give credit to the ingenious author of the essay on the vital and involuntary motions, we may easily distinguish it from a nervous affection of the head. In short, it appears from the few histories of the Hydrocephalus, that we can depend upon no symptom which can be con-

\* Vide some valuable observations, on the infantile remitting fever, by Dr. Butter.

sidered as characteristic.—In consequence of this, we should like faithful centinels, be continually upon our guard, and always suspect the approach of the enemy.—As two thirds of the diseases which inflict the human race, terminate in effusion in some part of the body, I would, whenever there was a severe head-ach, accompanied with an affection of the stomach, slow or irregular pulse, always suspect a dropsy of the brain.

#### EXPLICATION OF SOME OF THE SYMPTOMS.

We account for the loss of appetite and vomiting, from the diseased state of the brain, between which and the stomach, there is a very great sympathy.

The aversion to light, proceeds from an increased sensibility of the Retina.

The slow and irregular pulse, is not caused as Whytt supposed, by the water pressing upon the brain but by the vessels of this organ being distended with blood, which impairs the sensibility of the cardiac nerves. Now, as the action of the heart arises from the stimulus of the blood acting upon these nerves, it is evident, that the pulse must be affected, according to the degree of sensibility with which these organs are endowed.

The dilatation of the pupils of the eyes, is owing to the impaired sensibility of the optic nerves. The paralytic eyelids, strabismus, and blindness are owing to an insensibility of the several nerves which supply these different parts.

Whytt has accounted for the difficulty of respiration in the following manner; respiration is a function depending partly upon the will; he has observed, that a considerable pause generally intervenes after expiration, before a new inspira-



tion succeeds. As the sensibility of the brain, which is the seat of the will, is then greatly impaired by the accumulation of water in the ventricles, the uneasy sensation, proceeding from the difficulty the blood finds in passing through the lungs will be less attended to than usual. Hence, after every expiration, a long pause intervenes before inspiration succeeds, because the will is not exerted to put the muscles of respiration into action, until roused by the sense of suffocation, which is caused by the difficulty the blood finds in passing into the lungs, from the right ventricle of the heart.—We cannot give our assent to this explication, for the difficulty of breathing takes place, when the patient is in a sound sleep, and as the ingenious author of the Botanic Garden, has elegantly and justly observed,

*“ The will presides not in the bowers of sleep.”*

Perhaps a better method of accounting for this symptom, would be from an accumulation of blood, in the vessels of the lungs.

#### OF THE PROGNOSIS.

As in other diseases, we are governed in our Prognosis, by the parts affected, habit of body, violence and continuance of the symptoms, so likewise we judge of the issue of Hydrocephalus.

If it arises from a suppression of any customary evacuation, or if it is the offspring of another disease, there is greater certainty of a cure being effected, than when it arises from a scirrhus gland, or from a violent injury done to the head. In the Prognosis, it is of the greatest consequence to attend to the habit of body, for we certainly have a greater hope of curing a person of a good

constitution, than one who labours under the scrophula, the consumption or the rickets.

Evacuations of water, either by the bowels or the kidneys, are a good sign, and Celsus is certainly right when he says, "*Si plus humoris excernitur quam assumitur, tunc demum secundæ valetudinis spes est*\*."

Perhaps there is no disease in which the pulse varies, more than it does in this: we can therefore seldom rely upon it in our Prognostic.

When the dilatation of the pupils of the eyes increases, a strabismus or delirium takes place, subfultus tendinum, or convulsions happen, the disease is generally fatal, although cases are recorded, in which the patients have recovered, even after these most alarming symptoms had taken place.

#### CAUSES WHICH BRING ON THE COMPLAINT.

The causes which induce the Hydrocephalus, are;

First. An original laxity of the brain.

Secondly. Falls and blows on the head, which produce inflammation in the brain and afterwards an effusion of water.

Thirdly. Dr. Whytt says, a schirrous tumor of the Pituitary gland, or of any part in the neighbourhood of the brain, may occasion this disorder.

Fourthly, It may be caused by a suppression or diminished secretion of water.

Fifthly, It is produced by a variety of diseases, as intermitting, remitting, continual and erup-

\* Vide Celsus, p. 53, edit. Lugduni, 1760.

tive fevers, by the rheumatism, consumption, dysentery, melancholy, scrophula, and perhaps by every other complaint, in which the head is particularly affected for any length of time\*.

From the facts enumerated in the preceeding pages, it is evident there are two species of the Hydrocephalus. One we may consider as arising altogether from an inflammation of the brain, and the other as proceeding entirely from an original laxity of this organ. The following circumstances seem to confirm the first opinion.

First. The disease affects the robust and healthy children, as well as the weak and delicate.

Secondly. The pulse in the beginning of the disease is full and tense.

Thirdly. Delirium, difficulty of breathing, aversion to light, are all symptoms of inflammatory diseases.

Fourthly. It affects children more than adults, for they are more subject to inflammatory complaints, as excitability abounds in infancy.

Fifthly. Upon opening the cranium after death, the blood vessels are found turgid with blood, and there is every appearance of inflammation of the brain. Dr. Quin has related a case directly in point. The head of a patient was opened, who died, with every symptom of a Hydrocephalus, and no water was found in the ventricles; the vessels were all turgid with blood, and no anatomist could have injected them more nicely. This case cannot, I acknowledge, be

\* Vide the observ. of Rush, Lieutaud and Quin.

properly called a dropsy of the brain, although every symptom of this complaint was present. Phrenicula, an appellation which Dr. Rush has lately given to the Hydrocephalus, and which at a future time will perhaps be generally adopted, would have been more proper. It should likewise be remembered, that a physician is governed by the symptoms and not by the name of a disease. Prescribing for the mere name of a disorder, has made as much havoc among mankind, as the yellow fever or the plague.

Sixthly. Fothergill and Warren have told us, it is fatal in a shorter time, in vigorous and healthy constitutions, than in the delicate and weakly.

Seventhly. Is it probable, that a small quantity of limpid water, free from any chemical stimulus, should cause those alarming symptoms, which we find in the Hydrocephalus, and is it not a well authenticated fact, that a large quantity of this fluid, may be accumulated in the cranium without any injury to the health, and the patient enjoy the full exercise of his intellectual faculties? A remarkable case of this kind, is recorded by Dr. Michaelis, in the medical communications\*.

#### THE METHOD OF CURE.

This must be different, as in most other diseases, in the beginning, and latter stage of the complaint.

\* Vide Med. Commun. vol. I. p. 404.

We shall briefly consider the remedies which have been recommended. These are

- I. Venesection.
- II. Cathartics.
- III. Mercury.
- IV. Blisters.
- V. The application of cold to the head.
- VI. Setons and Issues.
- VII. Rest.
- VIII. Pediluvium.
- IX. Opium.
- X. Sternutatories.
- XI. Compression of the carotids.
- XII. Digitalis.
- XIII. An operation.

#### OF BLEEDING.

This is the first remedy to be used, and the one chiefly to be depended upon. It acts powerfully in producing absorption. Frequently in other diseases, when the eyes are suffused with blood, a sudden absorption will take place immediately after the use of the lancet. For proofs that venesection has frequently cured dropsies in other parts of the body, I refer to a variety of facts, recorded by Monroe, Hewson, Rush, and other authorities.

Dr. Quin tells us he would prefer local evacuations, to general bleeding, by means of leech-

es, cupping, or scarifying, where the patient is very young. A considerable discharge says he, may be procured from the temples, and where the operation can be performed with safety, the jugular vein or perhaps the temporal artery may be opened with advantage. This practice according to Patterfon, is eligible even in an advanced stage of the disorder.

#### OF CATHARTICS.

A second remedy is cathartics. I have constantly observed, says Dr. Rush, all the patients, whose cases have been related, to be relieved by plentiful and repeated evacuations from the bowells.

Quin likewise bears testimony, to the propriety of this practice.

The only case, which Dr. Whytt ever successfully treated, was by repeated purges of Rhubarb, Jalap and Calomel.\*

Dr. M<sup>c</sup> Bride performed some cures by cathartics, and Percival prefers them even to the use of the lancet.—Quin advises us to use Calomel, and cautions us against adding any thing to it, which is likely to produce a vomiting. Dr. Rush combines Jalap with it, but I would prefer the Calomel alone, because should a puking take place, the flow of blood would be encreased in the vessels of the head. It is necessary to give the Calomel in large doses, as the bowels are sometimes so torpid, that threeble the quantity

\* Vide Whytt page 745.



of what we generally prescribe in other diseases is frequently necessary. It has been administered to children in the extent of twenty grains at a time.\*

#### OF MERCURY.

Thirdly. This has been highly recommended. Dr. Rush tells us, he succeeded in but two cases, out of all those in which he gave it for many years. Dr. Quin declares it cannot be depended upon. Patterson coincides with those gentlemen, and after accurately examining the subject says, that even the liberal use of it cannot be relied upon, as a source of relief. †

Out of ten cases which came under the care of Dr. Warren, in which the mercurial treatment was pursued, the event proved fatal. ‡

On the contrary, Drs. Percival and Dobson were so successful, as to lead many to believe, that Mercury was a specific in this disorder. §

It is likewise certain, that a variety of cases are recorded, which have been completely cured, by the use of this celebrated medicine. ||

\* Vide Sir Theod. Mayerne, quoted by Patterson, page 44.

† Vide Patterson page 47.

‡ Ibid page 57.

§ Vide London Medical observ. and inq. p. 148. vol. 6. Manchester Memoirs, vol. 3. page 213.

|| Vide a paper by Dr. Dobson, in the Lond. Medical observ. and inq. vol. 6. page 48. One by Dr. Hunter, page 52. vol. 6. One by Dr. Campbell, in medical comment. vol. 9. page 240. One by Dr. Eason, vol. 8. page 325. and several by Dr. Lett-  
some, in the memoirs of the Lond. Med. Soc. vol. 1. page 273.

Dr. Percival effected a recovery, in a child under one year of age, who received by successive frictions, four ounces, six drachms, and two scruples of strong mercurial ointment, in the space of about two months. At the same time, thirty-six grains of Calomel were administered at proper intervals. ¶

#### OF BLISTERS.

Fourthly. All physicians speak highly of the application of blisters\*. They produce their good effects, by keeping up a drain, and taking off the plethora from the vessels of the brain. We are directed by some to cover the whole head with an epispastic, and to keep it continually running by means of the unguentum vesicatorium. Dr. Dawson recommends blisters to be applied behind the ears,

#### THE APPLICATION OF COLD TO THE HEAD.

Fifthly. The clay cap, ice, or cold water should be constantly applied to the head, which should be previously shaved.

Dr. Withering used this application, in the following powerful manner ; he poured six pints of cold water upon the head, and repeated it every four hours. In this case cold acts, by carrying off the heat, from the part affected.

¶ Vide the memoirs of the Manchester Society, vol. 3. page 213.

\* Whytt, p. 145. Fothergill Oct. Edit. vol. 2, p. 73, and 74. Patterson, p. 31. Rush medical inq. vol. 1. p. 225.



## OF SETONS AND ISSUES.

Sixthly. As Setons and Issues in the neck or neighbouring parts have been of service in the epilepsy and apoplexy, Dr. Quin reasoning from analogy, supposes they may be tried as preventative of the Hydrocephalus, especially if it arises from an hereditary predisposition.—Patterson supposes, that in a lingering or chronic case, there may be room for their application, and that they may be introduced as prophylactics, with strong expectations of advantage\*.

A perpetual issue, says Monroe, may be kept running at the bregma, or at the lower part of the occiput†.

## OF REST.

Seventhly. The patient should be kept as quiet as possible, in a dark room, free from the stimulus of light.

## PEDILUVIUM.

Eighthly. Pediluvium has been tried in one or two instances.

Quin mentions this remedy as an antiphlogistic, adapted to the first stage of the disease‡, while

\* Vide Patterson, p. 302.

† Monroe on the dropsy, p. 168.

‡ Quin, p. 78.

Patterson supposes, it ought not to be omitted at any time§. Dr. Hunter has related a case, which the vapour bath effectually cured||.

#### OPIUM.

Ninthly. Can Opium be administered with advantage? Patterson thinks favourably of this remedy. It has been used by Percival, who says, that opiates are necessary in large and repeated doses, when the pains are very acute. Dr. Dawson also tried this medicine, in the form of *Theriaca Andromachi*.

As the Hydrocephalus bears some relation to an inflammation of the brain, and as according to the most celebrated writers\* opium is improper in the Phrenitis, I would administer it with the greatest caution.

#### STERNUTATORIES.

Tenthly. Are Sternutatories ever proper? I should suppose the shock given to the head in the act of sneezing, could in no manner lessen the accumulation of blood, in the vessels of the brain, or produce an absorption of water from the ventricles. Besides, as the least motion of the head, must be detrimental to the patient, I should not be disposed to make the experiment.

§ Patterson, p. 51.

|| Medical Comment. vol. 8. p. 107.

\* Vide Sydenham, Pringle and Cullen.

## COMPRESSION OF THE CAROTIDS.

11thly. This has been proposed by Patterfon, in order to obviate a morbid accession of blood to the vessels of the head. We have no objection to a trial of this practice, *Fiat Experimentum.*

## DIGITALIS.

12thly. Quin was not fortunate in his trial of the digitalis. Withering gave it to some of his patients, and Patterfon is altogether silent on the subject.

## AN OPERATION.

13thly. Can a puncture be made in the brain with safety? When the disease arises from inflammation, the operation promises nothing.

In chronic cases it has been tried, but the patients have Uniformly died.—Le Catt and Remet\* evacuated the water of several Hydrocephalic patients, at different times, but death followed in every instance. Dr. Monroe† advises us, if ever the operation is attempted, to make the opening with a lancet, and at a part where

\* Vide Le Catt Philos. Transf. for 1751, and Med. Commen. Vol. 6, p. 422.

† Monroe on the Dropsy, p. 161.

there is no danger of wounding any large artery or venal sinus of the head.

If ever the Hydrocephalus proceeds from an original laxity of the brain, we must place our chief dependance upon that class of medicines, which are used in diseases proceeding from debility.

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#### ERRATUM.

In page 8th, fourth Line from bottom,—  
for *water*, read *urine*.

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